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Metal Piping-Hanger Compatibility

Code: 2018 Fuel Gas Code

Date: August 20, 2019

Section: 403.8

Code: 2018 Residential Code

Section: G2414.8

Question:

Are metal hangers typically required by NCFGC 407.2 exempt from the generalized corrosion prevention requirements of NCFGC 403.8?

Answer:

No.

The metal hangers are the most likely material to be in contact with the piping, so it is undesirable for them to corrode the pipe they are supposed to be supporting. This is explicitly mentioned in the NC Mechanical Code¹. The most common instance reported is the use of uncoated steel in contact with uncoated copper tubing or piping. Schedule 40 steel piping is generally supported with steel or galvanized steel supports and this meets minimum code, and schedule 40 steel gas piping is not the focus of this interpretation.

Follow up Question #1

If the metal support or clamp is not the same material as the gas pipe, does the **pipe** have to be coated with an isolating material, or can the **support/clamp** be coated with an isolating material?

Answer:

Either is minimally acceptable.

Follow up Question #2

What are some examples of some coated hangers that are generally¹ code compliant if installed correctly?

Answer:

Please see the following examples of coated supports:

¹ This is not an installation guide, standard, or specification. The design professional and/or installing contractor is responsible for selecting the appropriate support for the gas piping. The orientation of the support (in tension, in compression, substrate, etc.) greatly influences the choice, and any given clamp or support may not be adequate for all orientations of piping within any given building.



Remember, any selected support(s) need to satisfy several technical constraints, including:

- Being metal (NCFGC 407.2, MSS SP-58²)
- Corrosion-resistant materials (403.8)
- Support 150 lbs per support, (dia.<= 2-1/2")³

The images of the supports above, if installed correctly⁴, are capable of meeting the minimum code requirements in a shear mounting position, which is the most common in residential construction. There is no implied brand or style being promoted by this interpretation. To aid in a reader's search who may be unfamiliar with the products available and the MSS-SP58 standard, the following word sequences are offered as an Internet search engine guide:

Suggested Internet search phrases:

Emt straps, pvc coated
Pipe clamps, coated
MSS-SP58 supports, images
Piping supports, coated
Piping supports, copper

Another commonly used hanger commercially available is pictured below, and they are available in copper clad and non-copper clad, so a product is available based on the piping material being supported. If copper clad is used on copper, there is no further requirement for isolation.



Follow up Question #3

Are plastic J-hooks for plastic water piping, such as pex, prescriptively code-compliant with section 404.7 for metal gas piping?

² See Interpretation for 407.2 concerning MSS-SP58 standard

³ See Interpretation for 407.2, Table 1. Obviously the size of fastener and condition of substrate have an influence on this. Appropriate fasteners must be selected.

⁴ Always install per manufacturer's installation instructions.

Answer:

No.

They may sometimes be accepted as an alternate method, but the referenced standard (MSS-SP58) has no provisions for plastic supports, possibly due to unknown performance during all conditions a building may be subject to, including extreme heat and fires. Also, some manufacturers of the CSST do not allow the use in some manufacturer's installation instructions we have read. Possibly some of the outside diameters of CSST are different from the PEX and could cause damage to the thin wall of the CSST. If the manufacturer of a listed gas piping, such as CSST, allows the use in their installation instructions, then it would be prescriptively acceptable for that gas piping material. If they do not allow it, then they are not compliant.

It may occur for these hooks to be used for small copper piping diameters ½" and less, and accepted as perhaps an alternate method under Section 105.2 of the Fuel Gas Code if the CSST manufacturer did not outright prohibit their use. They certainly offer good corrosion isolation, they have a built-in standoff so the piping is not held against the substrate, and the hook itself is not going to corrode the piping material. However, these same benefits can be derived with the appropriate coated metal support (or of course same-material supports) and the prescriptive supports are also metal so they will behave in a known manner under extreme heat.

Follow up Question #4**What other scenarios can potentially be considered code-compliant?****Answer:**

The following examples are offered as a summary of scenarios and comments as to code-compliance for some commonly encountered, non-prescriptive corrosion isolation methods.

- Plastic coated piping with uncoated hangers – no known code issues. All coatings are subject to damage during installation, care needs to be taken to maintain coating.
- Bare metal piping wrapped with some isolating material and supported with uncoated metal supports – Using non-conductive tapes to wrap around the pipe is not directly prohibited, but it is subject to job-specific installation issues. How many wraps is sufficient? Is the tape meant for only indoor locations? Will it slide out of the support? etc, etc. These are all variables that lead to variable installation performance, and, by default, variable acceptance by code enforcement.
- The use of 1" steel strapping commonly used for ductwork support in one-and two-family dwellings. This is another product that may not be outright non-compliant, but its approval depends heavily on just how it is installed at any given site. It commonly damages the coating on CSST during installation, it only works in a horizontal support position (not for vertical piping) and only when the piping is directly slung below it. Since there are so many variables in installation, it is subject to variable acceptance, and that is not a goal of code enforcement.

Summary

Using commercially available equipment design for tube and piping support, and following both the manufacturer's installation instructions of the piping/tubings and the supports, and following the requirements of NCFGC 407.2 should lead to a code-compliant installation.

Keywords:

bronze

Excerpt from 2018 NC Mechanical Code: 305.2 Materials. Pipe hangers and supports shall have sufficient strength to withstand all anticipated static and specified dynamic loading conditions associated with the intended use. Pipe hangers and supports that are in direct contact with piping shall be of *approved* materials that are compatible with the piping and that will not promote galvanic action.